

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A wireless control system for remotely controlling a winch, comprising:

a hand-held wireless remote control having switches providing at least three manual inputs;

5 a transmitter in said wireless remote control, said transmitter responsive to an input thereto for transmitting a carrier frequency;

a programmed processor, programmed for modulating the carrier frequency to produce a frame of bits;

said frame of bits including an ID field for identifying a particular winch to be controlled, and a control field for identifying a control to be exerted on the winch;

10 one said switch responsive to a manual input for providing winch In signals only for as long as manually activated;

one said switch responsive to a manual input for providing winch Out signals only for as long as manually activated;

one said switch responsive to a manual input for providing On/Off signals;

15 said programmed processor for modulating said transmitter in response to the manual inputs of said switches, said processor programmed to respond to said In signals and said Out signals for placing corresponding bits in said control field of said frame of bit bits; and

20 said programmed processor adapted for receiving an Off signal manually input by a user of the wireless remote control and responsive thereto for placing said processor into a sleep mode to thereby conserving power; and

said programmed processor responsive to a release of either of the switches producing the respective In signals and the Out signals for automatically generating a signal for use in stopping the winch, said programmed processor programmed for modulating said carrier with the signal for stopping the winch.

Claim 2 (previously presented): The wireless control system of claim 1, further including in combination a wireless receiver and antenna adapted for mounting to a vehicle, and wherein said winch is adapted for mounting to a vehicle.

Claim 3 (previously presented): The wireless control system of claim 1, wherein said transmitter is constructed to transmit the frame of bits during a period of transmission, and wherein said Out, In and stop signals occupy the same bit positions of said control field.

Claim 4 (previously presented): The wireless control system of claim 1, further including a circuit for storing a multi-bit security code, and a circuit responsive to an input to said transmitter of the Out signal and the In signal for transmitting said security code together with one of said Out signal and said In signal.

Claim 5 (canceled)

Claim 6 (original): The wireless control system of claim 1, further including a single on/off press-type switch for activating and deactivating the wireless control system, and further including a visual indicator for indicating an activated or deactivated status of the wireless control system.

Claim 7 (original): The wireless control system of claim 6, further including a circuit for blinking the visual indicator in a distinctive manner to visually indicate the status of the wireless control system.

Claim 8 (original): The wireless control system of claim 6, further including a timer for timing a period of time in which the on/off switch has been pressed before activating and deactivating the wireless control system.

Claim 9 (previously presented): The wireless control system of claim 1, wherein one said switch comprises a press-type of Out switch, one said switch comprises a press-type of In switch and one said switch comprises a press-type on/off switch, said Out press-type switch associated with circuits for causing a cable of the winch to unwind in an out direction, said In press-type switch associated with circuits for causing the cable of the winch to wind in an in direction, and said on/off switch associated with circuits for applying power and reducing power consumption in the wireless control system.

5 Claim 10 (canceled)

Claim 11 (previously presented): The wireless control system of claim 1, wherein said circuits associated with said Out and IN switches are responsive to a single release of said Out or IN switch for transmitting said stop signal multiple times.

Claim 12 (previously presented): The wireless control system of claim 1, further including in combination a receiver mounted to equipment to which said winch is mounted, said receiver including an antenna for receiving signals transmitted from said transmitter, said antenna including a conductive foil strip adhered to an insulator, said conductive foil strip being configured as a dipole antenna.

Claim 13-20 (canceled)

Claim 21 (original): A wireless remote control for use with a winch mounted on a vehicle, comprising:

a wireless receiver mounted to the vehicle;

5 a wireless hand-held transmitter for transmitting a coded signal to the receiver, said wireless transmitter having a forward switch, a reverse switch and a power switch for controlling power to the transmitter;

10 said wireless transmitter provided with a transmission format for the coded signal, said transmission format including a field for a security code, and a field for a control code used for controlling operation of the winch, said wireless transmitter modulating a carrier frequency by modulating the security code and the control code thereon;

said control code including a forward code, a reverse code and a stop code;

15 said transmitter including a programmed processor responsive to activation and deactivation of said forward switch, and responsive to activation and deactivation of said reverse switch, for causing modulation of said carrier frequency, said processor programmed to modulate said carrier frequency with said forward code when said forward switch is activated, said processor programmed to modulate said carrier frequency with said reverse code when said reverse switch is activated, and said processor programmed to modulate said carrier frequency with said stop code when either said forward switch or said reverse switch is deactivated;

20 a horizontally polarized dipole antenna mounted to the vehicle;

25 said wireless receiver coupled to said antenna, and said receiver including demodulation circuits for demodulating said control codes and controlling operation of said winch; and

a solenoid arrangement coupled between a battery of the vehicle and the winch, said receiver including a driver circuit for driving the solenoid arrangement in response to the control signals demodulated from the carrier frequency, said solenoid arrangement driven in response to a demodulated forward code for driving current through a motor of said winch to wind a cable on a reel in a forward direction, and said solenoid arrangement driven in response to a demodulated reverse code for driving current through the motor to unwind the cable from the reel, and said solenoid arrangement disconnecting the winch motor from the battery in response to a demodulated stop code.

Claim 22 (original): The wireless remote control of claim 21, further including in combination an ATV, and wherein said antenna is mounted to a plastic portion of the ATV.

Claim 23 (original): The wireless remote control of claim 22, wherein said antenna comprises a conductive foil antenna mounted horizontally on an undersurface of a plastic headlight housing.

Claim 24 (original): The wireless remote control of claim 23, wherein said antenna is mounted to the undersurface of the headlight housing with an adhesive.

Claim 25 (previously presented): A wireless control for use with a winch mounted on a vehicle, comprising:

a winch having a DC motor operated by a vehicle battery, said winch having a drum rotatable in a first direction by a DC current flowing in said DC motor in one direction to wind a cable on said drum, and said drum rotatable in a second direction by DC current flowing in said DC motor in an opposite direction to unwind the cable from said drum;

a solenoid arrangement responsive to a signal for switching a direction of the DC current from the vehicle battery to the DC motor of the winch to control whether the cable is wound or unwound on the drum;

10 a wireless remote control having a first button which when depressed causes a first signal to be transmitted as long as said first button is depressed, and a second button which when depressed causes a second signal to be transmitted as long as said second button is depressed, said first and second buttons of said wireless remote control being effective to control the winding and the unwinding of the cable on the drum of the winch;

15 a wireless receiver mounted to the vehicle, said wireless receiver adapted for receiving the first and second signals transmitted by said wireless remote control, said wireless receiver having an electrical cable coupling control signals to said solenoid arrangement; and

an antenna having a base member from which a first antenna element and a second antenna element extends, said base member adapted for mounting to the vehicle, said first and second elements extending in opposite directions.

Claim 26 (previously presented): The wireless control of claim 25, wherein said electrical cable connecting said wireless receiver to said solenoid arrangement includes a connector for connecting an end of said wireless receiver cable to said solenoid arrangement.

Claim 27 (previously presented): The wireless control of claim 25, wherein said antenna elements each comprise adhesive-backed metallic foil.

Claim 28 (previously presented): The wireless control of claim 25, wherein said base member of said antenna is adhesive-backed for mounting to a surface of the vehicle.

Claim 29 (previously presented): The wireless control of claim 25, wherein said wireless remote control further includes a button which, when depressed, removes electrical power from circuits housed by said wireless remote control.

Claim 30 (previously presented): The wireless control of claim 25, wherein said solenoid arrangement includes a pair of electrically-operated solenoids, and wherein said wireless receiver further includes a pair of relay contacts for switchably controlling said pair of electrically-operated solenoids.

Claim 31 (previously presented): The wireless control of claim 25, wherein said antenna is remotely located from said wireless receiver on the vehicle, and including an electrical cable for connecting said antenna to said wireless receiver.